

## I-1001

Insect cell lines as sources of critical components in artificial diets for parasitoids and predators using insect cell lines. S. M. FERKOVICH, H. Oberlander, USDA, ARS, 1700 SW 23rd Dr., Gainesville, FL 32608 and J. Carpenter, USDA, ARS, P.O. Box 748, Tifton, GA 31793.

The use of insect cell lines and their products to develop and/or improve artificial diets for parasitoids will be discussed. Although > 33 species of parasitoids have been reared on artificial diets, only 14 species have been reared from egg to adult on diets without insect components. Moreover, the diets of some species of parasitoids and predators that have been developed need improvement in terms of yield and quality of insects compared with those reared on natural hosts or prey. The addition of insect components such as hemolymph or hemolymph derived-factors, insect eggs and, in some cases, pulverized whole insects to a suboptimal diet may improve or optimize the diet so that the growth rate and reproductive capacities of the beneficial insect are improved. Because of the cost considerations and the technical difficulties associated with hemolymph such as melanization, it is imperative that substitute material be identified that can be added directly to the diets. We are investigating the potential of providing requisite host factors or their products for parasitoids or predators through the use of insect cell lines and/or their products. This approach is based on the hypothesis that there are many unidentified host-derived growth regulatory molecules as well as the host-derived basic dietary constituents required for growth and reproduction of some parasitoids and predators that are produced by insect cell lines derived from the host insect as well as other species. To assess the effect of supplementing an artificial diet of a pupal parasitoid, *Diapetimorpha introita*, a modified Grace-Yunker's medium was conditioned with a cell line (IPL-LdFB) originally derived from fat body of the gypsy moth, *Lymantria dispar*. Conditioned media was then added to an artificial diet and encapsulated in paraffin domes (Greany, pers. comm.). Newly oviposited eggs of *D. introita* were then placed on the encapsulated diet and the growth and development of the parasitoid were monitored. The average weight of parasitoids grown on the cell line-supplemented diet was significantly greater than parasitoids on the control diet and was comparable to the weight of parasitoids reared on the natural host, *Spodoptera frugiperda*. The rate of development, cocoon production and adult emergence on the supplemented diet were similar those of parasitoids on the control diet.